



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/884,796	06/19/2001	Zine-Eddine Boutaghoul	169.12-0496	4390

164 7590 06/18/2003
KINNEY & LANGE, P.A.
THE KINNEY & LANGE BUILDING
312 SOUTH THIRD STREET
MINNEAPOLIS, MN 55415-1002

EXAMINER

LE, MINH

ART UNIT PAPER NUMBER

2652

DATE MAILED: 06/18/2003

J

Please find below and/or attached an Office communication concerning this application or proceeding.

07

Office Action Summary

Application No.

09/884,796

Applicant(s)

BOUTAGHOU ET AL.

Examiner

Minh Le

Art Unit

2652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a): In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Art Unit: 2652

FINAL ACTION

1. This communication is responsive to Amendment filed on April 02, 2003.
2. Claims 2, 3 and 5 are amended.
3. Claims 15 and 16 are added.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 1 are rejected under 35 U.S.C. 102(b) as being anticipated by Harada (U.S.P 5,276,573).

As per claim 1, Harada shows in Fig. 3 an air bearing slider comprising a transducer 4 for communicating with the disc, means 3 for supporting the transducer so that the transducer is a closest position with respect to the disc during flight (See col. 7, lines 34-53).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to

Art Unit: 2652

which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2-3 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada in view of Tokuyama (USP 5,886,856).

As per claim 3, Harada shows in Fig. 3 the slider of claim 2, wherein an interface of the first material 21 and the second material 3 comprises a latitude plane substantially perpendicular to the air-bearing surface.

As per claim 15, Harada shows in Fig. 3 the slider of claim 3, wherein the first material and the second material at a single latitudinal plane.

As per claim 16, Harada shows in Fig. 6 the slider of claim 2, wherein the latitudinal plane separates the front portion 9 from the rear portion, wherein the front portion of the slider is composed entirely of the first material (It is noted that the substrate portion 3 is made of ceramic, See col. 8, lines 17-25) and wherein the rear portion 20 of the slider body is composed entirely of the second material (It is noted that the substrate portion 20 being made of silicon, See col. 7, lines 34-38 and col. 7, lines 60-66).

As per claim 2, Harada shows in Fig. 6 a slider of claim 1, wherein the means 3 for supporting the transducer including a composite slider body with a front portion 9 composed of a first material (It is noted that the substrate portion 3 is made of ceramic, See col. 8, lines 17-25), and a rear portion composed of a second material (It is noted that the substrate portion 20 being made of silicon has a substantially recessed portion at a rear portion, See col.

Art Unit: 2652

7, lines 34-38 and col. 7, lines 60-66), the slider body having an air bearing surface defined on a disc opposing face of the slider body (See Fig. 1-3), wherein the air bearing surface comprises the front portion and the rear portion, and a transducer basecoat portion attached to the rear portion of the slider body and containing the transducer (See Fig. 3 and col. 7, lines 34-53).

Harada does not expressly teach the position of the pole tip at a mechanical close with respect to the disc during flight.

However, Tokuyama teaches the position of the pole tip 40 (Fig. 5) at a mechanical close with respect to the disc during flight (col. 4, lines 1-9).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the slider with the pole tip a mechanical close in order to provide a magnetic disc recording/reproducing apparatus being capable to performing a high density recording, as taught by Tokuyama in col. 2, lines 65-67/col. 3, lines 1-3.

8. Claims 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada in view of Tokuyama, further in view of Chang (USP 6,385,011).

As per claim 7 Harada teaches the slider, wherein a lapping durability of the first material (Silicon) is greater than a lapping durability of the second material (ceramic).

As per claim 4, Harada does not expressly disclose the slider of claim 3 wherein the thickness of the first material is approximately 15 times of the thickness of the second material.

Art Unit: 2652

Chang discloses a slider in Fig. 3, wherein the thickness of the first material 204 is from 50 nm to 1,000 nm (See col. 6, lines 1-19) and the thickness of the second material 104 is from 10 nm to 200 nm (See col. 4, lines 15-31). Thereby, it could choose the thickness d and d' of the first and second material respectively, such as to $d = 15 d'$ (Example: $d = 150$ nm and $d' = 10$ nm).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide a slider, wherein the thickness of the first material is approximately 15 times of the thickness of the second material, as taught by Chang. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide a slider, wherein the thickness of the first material is approximately 15 times of the thickness of the second material, in order to make "a slider having improved positive crown and camber". Thus, they allow the read/write head to fly closer to the surface of the recording medium, as taught by Chang (col. 3, lines 3-16).

As per claim 5, Harada does not expressly disclose the slider of claim 3 wherein the thickness of the first material is approximately half of the thickness of the second material.

Chang discloses a slider in Fig. 3, wherein the thickness of the first material 204 is from 50 nm to 1,000 nm (See col. 6, lines 1-19) and the thickness of the second material 104 is from 10 nm to 200 nm (See col. 4,

Art Unit: 2652

lines 15-31). Thereby, it could choose the thickness d and d' of the first and second material respectively, such as to $d = 1/2 d'$ (Example: $d = 100$ nm and $d' = 200$ nm).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide a slider, wherein the thickness of the first material is approximately half of the thickness of the second material, as taught by Chang. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide a slider, wherein the thickness of the first material is approximately half of the thickness of the second material, in order to allow the slider flying closer to the surface of the disc, as taught by Chang in col. 3, line 4.

As per claim 6, Harada does not expressly disclose the slider of claim 3 wherein the transducer portion comprises the second material.

Chang discloses a slider in Fig. 4, wherein the transducer portion 86 comprises the second material 138.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide a slider, wherein the transducer portion comprises the second material, as taught by Chang. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide a slider, wherein the transducer portion comprises the second material, in order to allow the slider flying closer to the surface of the disc, as taught by Chang in col. 3, line 4.

Art Unit: 2652

As per claim 8, Harada and Chang do not expressly disclose the slider of claim 6, wherein the first material is AlTiC and the second material is Al2O3.

Tokuyama discloses a slider wherein the substrate is made of AlTiC or Al2O3 (See col. 16, lines 49, 60 and col. 16, lines 2, 14).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide a slider, wherein the first material is AlTiC and the second material is Al2O3, as taught by Tokuyama. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide a slider, wherein the first material is AlTiC and the second material is Al2O3, in order to "provide a magnetic head slider assembly of a novel and improved structure having only a projecting portion which incorporates therein cores of a magnetic head formed in a thin film of a main body of the slider as well as a method of manufacturing the magnetic head slider assembly", as taught by Tokuyama (col. 3, lines 5-10).

9. Claim 9, 10, 11 and 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Harada in view of Tabuchi (U.S. Patent No. 5,764,832).

As per claim 9 Harada discloses a method of manufacturing a slider body which supports a transducer so that the transducer is at closest position with respect to a disc during flight, the method comprising the steps of: forming a composite wafer comprising a plurality of joined slider bodies (See Fig. 13a), forming on a layer of second material a transducer basecoat portion containing a plurality of transducer, wherein at least one transducer resides on each of

Art Unit: 2652

the slider bodies (See Fig. 14b), defining an air bearing surface on each slider body, the air bearing surface comprising a leading portion of the first material and a trailing portion of the second material (See Fig. 15).

Harada does not expressly disclose the method of manufacturing a slider body including a step of forming a composite wafer comprising a layer of a first material and a layer of a second material.

Tabuchi discloses in Fig. 22 a method of manufacturing a slider body including the step of forming a composite wafer comprising a layer of a first material and a layer of a second material, wherein a lapping durability of the first material is greater than a lapping durability of the second material.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide a method of manufacturing a slider body including the step of forming a composite wafer comprising a layer of a first material and a layer of a second material, wherein a lapping durability of the first material is greater than a lapping durability of the second material, as taught by Tabuchi. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide a method of manufacturing a slider body including the step of forming a composite wafer comprising a layer of a first material and a layer of a second material, in order to provide "a method of manufacturing an integrated semiconductor optical device having a process of laminating a layer of an optical component", as taught by Tabuchi (col. 6, lines 40-42).

Art Unit: 2652

As to claims 11, 12 Harada discloses a method of claim 9 further comprising severing the composite wafer into a plurality of bars, and severing a bar into a plurality of individual sliders (See Fig. 14a-c).

As to claim 10 Harada does not expressly disclose a lapping durability of the first material is greater than a lapping durability of the second material.

* Tabuchi discloses in Fig. 22 a method of manufacturing wherein a lapping durability of the first material is greater than a lapping durability of the second material.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide a method of manufacturing, wherein a lapping durability of the first material is greater than a lapping durability of the second material, as taught by Tabuchi. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide a method of manufacturing a slider body including the step of forming a composite wafer comprising a layer of a first material and a layer of a second material, wherein a lapping durability of the first material is greater than a lapping durability of the second material, in order to provide "a method of manufacturing an integrated semiconductor optical device having a process of laminating a layer of an optical component", as taught by Tabuchi (col. 6, lines 40-42).

Art Unit: 2652

10. Claim 13, 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Harada and Tabuchi as applied to claim 9 above, and further in view of Chang et al. (U.S. Patent No. 6,385,011).

As per claim 13, Harada and Tabuchi do not expressly disclose a method of claim 9, wherein the thickness of the first material is approximately 15 times of the thickness of the second material.

Chang discloses in Fig. 3 a slider, wherein the first material 204 having the thickness of from 50 nm to 1,000 nm. (See col. 6, lines 1-19) and the second material 104 having the thickness of from 10 nm to 200 nm (See col. 4, lines 15-31). Thereby, it could choose the thickness d and d' of the first and second material respectively, such as to $d = 15 d'$ (Example: $d = 150$ nm and $d' = 10$ nm).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide a method of manufacturing a slider body, wherein the thickness of the first material is approximately 15 times of the thickness of the second material, as taught by Chang. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide a method of manufacturing a slider body, wherein the thickness of the first material is approximately 15 times of the thickness of the second material in order to allow the slider flying closer to the surface of the disc, as taught by Chang in col. 3, line 4.

Art Unit: 2652

As per claim 14, Harada and Tabuchi do not expressly disclose a method of claim 9, wherein the thickness of the first material is approximately half of the thickness of the second material.

Chang discloses in Fig. 3 a slider, wherein the first material 204 having the thickness of from 50 nm to 1,000 nm (See col. 6, lines 1-19) and the second material 104 having the thickness of from 10 nm to 200 nm (See col. 4, lines 15-31). Thereby, it could choose the thickness d and d' of the first and second material respectively, such as to $d = 1/2 d'$ (Example: $d = 100$ nm and $d' = 200$ nm).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide a method of manufacturing a slider body, wherein the thickness of the first material is approximately half of the thickness of the second material, as taught by Chang. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide a method of manufacturing a slider body, wherein the thickness of the first material is approximately half of the thickness of the second material in order to allow the slider flying closer to the surface of the disc, as taught by Chang in col. 3, line 4.

Response to arguments

A. Regarding claim 1, applicant appears to argue that Harada teaches a means for supporting the transducer so that the transducer is as near as possible to the recording medium during operation but fails to teach a

Art Unit: 2652

supporting means for supporting the transducer at a position closer than any other position of the slider to the recording medium during operation. The argument is not found to be persuasive because the claim does not limit that the transducer is at a closest position than any other position of the slider to the recording medium as argued. The claim only requires that the means for supporting the transducer supports it at a closest position with respect to the recording medium. Harada teaches a means for supporting the transducer as near as possible to the recording medium (col. 7, lines 50-53), or as close as 0.1 micro-meter (col. 9, lines 5-15) is very well reading on the claimed "closest position" of the transducer to the recording medium since "closest" is a relative term.

B. Regarding claim 2, applicant argues that Harada fails to teach the slider body including a front portion composed of a first material and a rear portion composed of a second material but rather teaches the use of the same material "ceramic and silicon" for both the front portion and the end portion. Applicant argument is not persuasive because the claim does not limit that the first material and second material are different material.

Still regarding claim 2, applicant further argues that Harada does not meet the limitation of the air-bearing surface comprising the front portion and the rear portion because in Harada slider body, the air bearing surface includes only rails 6 of ceramic main body 3 with a substrate 20 (which is analogous to a cavity 38) while applicant specification shows that "air bearing

Art Unit: 2652

surface 40 is generally considered to include cross rail 32, side rail 34, and center rail 36, but not cavity 38". The argument is not found to be persuasive because the rejection is based on what being claimed in claim 2 not based on what is disclosed in the specification.

C. Regarding claim 3, applicant argues that Harada teaches an interface of the first material and second materials comprising a longitudinal plane substantially perpendicular to the air bearing surface but fails to teach an interface of the first material and the second material comprising a latitudinal plane substantially perpendicular to the air bearing surface. This argument is not found to be persuasive because the claim is not limit to the latitudinal plane with respect to the slider. Harada teaches the interface plane comprising a latitudinal plane with respect to the substrate 20 is very well reading on claim "latitudinal plane substantially perpendicular to the air bearing surface".

D. Regarding claims 4-6, applicant that the combination of the teaching of Harada and Chang does not render the subject matter of claim 4-6.

This argument is not found to be persuasive because both Harada and Chang teach the slider including first and second materials, Harada teaches the structure limitations of the slider as recited in claims 2 and 3, Chang teaches the thickness of the materials as recited in claims 4, 5 and claim 6 limitation. It would have been obvious to modify the Harada slider by applying the material thickness of Chang. The combination would have been obvious because both Harada (col. 7, lines 50-53) and Chang (col. 3, lines 1-16) have

Art Unit: 2652

the same suggestion as to a slider in which the read/write head flying closer to the recording medium.

The limitation "wherein the pole tip is at a mechanical close point with respect to disc during flight" is the new limitation which is moot in view of the new ground of rejection. (See claim 2 rejection).

E. Applicant further argues that Harada and Tabuchi references are directed different technologies. This argument is not found to be persuasive because claims 9-14 are directed to the method of manufacturing (not apparatus), Harada and Tabuchi are directed to the same technologies (i.e. the using of wafer method in manufacturing the electronics devices).

It would have been obvious to apply the wafer method of Tabuchi to the teaching of Harada to provide a method of manufacturing a slider body.

It has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992).

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In

Art Unit: 2652

the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action. The new limitations necessitated the new ground(s) of rejection are "the pole tip is at a mechanical close point with respect to the disc during flight" as amended in independent claim 2.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh Le whose telephone number is (703) 305-7867. The examiner can normally be reached on 10:00AM - 7:00PM (Mon- Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T Nguyen can be reached on (703) 305-9687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3718 for regular communications and (703) 305-3718 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

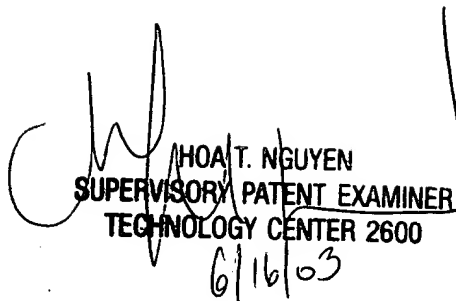
Application/Control Number: 09/884,796

Page 16

Art Unit: 2652

ML

June 16, 2003


HOA T. NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600
6/16/03